

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

### **Listing of Claims:**

1. (Currently Amended) A chitosan-calcium (II) complex, said complex consisting essentially of comprising:

a gel agent consisting essentially of a chitosan salt, wherein said complex contains  $\geq 0.5$  wt % chitosan having an average molecular weight  $\geq 10$  kD, a polydispersity  $\geq 2.0$ , deacetylation degree  $\geq 65\%$  and wherein said complex has a water retention value  $\geq 300\%$ , pH  $\leq 6.9$ ; and

calcium (II) ions bound to the chitosan ~~gel~~ at a content  $\geq 0.1$  wt % relative to chitosan.

2. (Currently Amended) A chitosan-calcium complex according to claim 1, wherein said calcium (II) ions are bound with the chitosan ~~gel~~ by coordinate bonds or hydrogen bonds.

3. (Original) A chitosan-calcium (II) complex according to claim 1, wherein said complex is water soluble.

4. (Currently Amended) A method to produce a chitosan-calcium complex from a gel of a chitosan salt, comprising the steps of:

a) providing a suspension of a gel agent consisting essentially of a chitosan ~~salt~~, said gel agent containing  $\geq 0.01$  0.5 wt % chitosan gel, said gel agent having an average polymerization degree  $\geq 10$  kD, a polydispersity  $\geq 2.0$ , and deacetylation degree  $\geq 65\%$ ; and

b) mixing said chitosan gel agent with  $\geq 0.01$  0.1 wt % calcium (II) salt to form said complex;

wherein said complex has a water retention value  $\geq 300\%$  and a pH  $\leq 6.9$ , said complex consisting essentially of chitosan and calcium.

5. (Original) A method according to claim 4, wherein said calcium (II) salt is selected from the group consisting of calcium chloride and calcium acetate.

6. (Original) A method according to claim 5, wherein said calcium (B) salt concentration is 10-50 wt % relative to chitosan.

7. (Original) A method according to claim 4, wherein said mixing step is carried out at a temperature  $\geq 10^{\circ}\text{C}$ .

8. (Original) A method according to claim 7, wherein said mixing step is carried out at a temperature between  $20^{\circ}\text{C}$  and  $40^{\circ}\text{C}$ .

9. (Currently Amended) A chitosan-calcium (II) complex consisting essentially of chitosan and calcium prepared according to the method of claim 4.

10. (Currently Amended) A method of preparing chitosan salt gels, comprising the steps of:

a) degrading chitosan in an aqueous acidic solution with enzymes, said solution having a chitosan concentration of  $\geq 0.5\text{ wt \%}$  for a desired time and at a desired temperature;

b) deactivating said enzymes after said desired time is completed;

c) adding an aqueous basic solution to said enzyme/aqueous chitosan mixture to attain  $4.0 \leq \text{pH} \leq 6.0$ ; and

d) continuously mixing said mixture with a calcium (II) salt until a gel having a gel agent consisting essentially of a chitosan salt forms, wherein said gel agent contains  $\geq 0.5\text{ wt \%}$  chitosan having an average molecular weight  $\geq 10\text{ kD}$ , a polydispersity  $\geq 2.0$ , deacetylation degree  $\geq 65\%$  and wherein said complex has a water retention value  $\geq 300\%$ ,  $\text{pH} \leq 6.9$ , and calcium (II) ions bound to the chitosan ~~gel~~ at a content  $\geq 0.1\text{ wt \%}$  relative to chitosan, said complex consisting essentially of chitosan and calcium.

11. (Original) A method according to claim 10, wherein said gel forms at  $6.3 \leq \text{pH} \leq 6.9$ .

12. (Original) A method according to claim 10, wherein said aqueous acidic solution comprises an acid selected from the group consisting of hydrochloric acid, acetic acid and lactic acid.

13. (Original) A method according to claim 10, wherein said enzymes are selected from the group consisting of chitanases, cellulases and xylanases.

14. (Original) A method according to claim 10, wherein said aqueous basic solution comprises a member selected from the group consisting of sodium hydroxide, potassium hydroxide, sodium carbonate and potassium carbonate.

15. (Original) A method according to claim 10, wherein the concentration of chitosan in said aqueous acidic solution is between about 1 wt % and 3 wt %.

16. (Original) A method according to claim 10, wherein said degrading step is carried out at a temperature  $\geq 10^{\circ} \text{C}$ .

17. (Original) A method according to claim 10, wherein said degrading step is carried out at a temperature between about  $20^{\circ} \text{C}$  and  $60^{\circ} \text{C}$ .

18. (Original) A method according to claim 10, wherein said deactivating step is carried out at a temperature  $\geq 70^{\circ} \text{C}$ .

19. (Original) A method according to claim 10, wherein said aqueous basic solution has a concentration of between about 5 wt % and 10 wt %.

20. (Original) A method according to claim 10, wherein said method is a batch process.

21. (Currently Amended) A method of preparing a gel of a chitosan salt, comprising the steps of:

a) degrading chitosan hydrolytically, said chitosan being dissolved in an aqueous acidic solution, said solution having a chitosan concentration of  $\geq 0.5$  wt % for a desired time and at a desired temperature;

b) adding an aqueous basic solution to the mixture of step a) to attain  $4.0 \leq \text{pH} \leq 6.0$ ; and

c) continuously mixing the product of step b) with a calcium (II) salt until a gel having a gel agent consisting essentially of a chitosan salt forms, wherein said gel agent contains  $\geq 0.5$  wt % chitosan having an average molecular weight  $\geq 10$  kD, a polydispersity  $\geq 2.0$ , deacetylation degree  $\geq 65\%$  and wherein said complex has a water retention value  $\geq 300\%$ ,  $\text{pH} \leq 6.9$ , and calcium (II) ions bound to the chitosan ~~gel~~ at a content  $\geq 0.1$  wt % relative to chitosan, said complex consisting essentially of chitosan and calcium.

22. (Original) A method according to claim 21, wherein said step a) utilizes an acid selected from the group consisting of hydrochloric acid and chloroacetic acid.

23. (Original) A method according to claim 22, wherein the concentration of said acid used is at least 0.01 wt %.

24. (Original) A method according to claim 21, wherein step a) is carried out at a temperature of  $\geq 20^\circ \text{C}$ .

25. (Original) A method according to claim 24, wherein said temperature is between 40° C and 80° C.

26. (Original) A method according to claim 21, wherein said aqueous acidic solution comprises hydrochloric acid, acetic acid or lactic acid.

27. (Original) A method according to claim 24, wherein said aqueous acidic solution has a chitosan concentration of between 1 wt % and 3 wt %.

28. (Original) A method according to claim 21, wherein said aqueous basic solution comprises a base selected from the group consisting of sodium hydroxide, potassium hydroxide, sodium carbonate and potassium carbonate.

29. (Original) A method according to claim 28, wherein said aqueous basic solution has a concentration of 5 wt % to 10 wt %.

30. (Original) A method according to claim 21, wherein said gel forms at  $6.3 \leq \text{pH} \leq 6.9$ .

31. (Original) A method according to claim 21, wherein said method is a batch process.

32. (Original) A method according to claim 21, wherein said chitosan concentration in said aqueous acidic solution is between 1 wt % and 3 wt %.

33. (Currently Amended) A method of preparing a chitosan salt gel, comprising the steps of:

a) degrading chitosan with an oxidizing agent, said chitosan being dissolved in an aqueous acidic solution, said solution having a chitosan concentration of  $\geq 0.5$  wt % for a desired time and at a desired temperature;

b) adding an aqueous basic solution to the mixture of step a) to attain  $4.0 \leq \text{pH} \leq 6.0$ ; and

c) continuously mixing the product of step b) with a calcium (II) salt until a gel having a gel agent consisting essentially of a chitosan salt forms, wherein said gel agent contains  $\geq 0.5$  wt % chitosan having an average molecular weight  $\geq 10$  kD, a polydispersity  $\geq 2.0$ , deacetylation degree  $\geq 65\%$  and wherein said complex has a water retention value  $\geq 300\%$ ,  $\text{pH} \leq 6.9$ , and calcium (II) ions bound to the chitosan ~~gel~~ at a content  $\geq 0.1$  wt % relative to chitosan, said complex consisting essentially of chitosan and calcium.

34. (Original) A method according to claim 33, wherein said oxidizing agent is selected from the group consisting of hydrogen peroxide and sodium perborate.

35. (Original) A method according to claim 33, wherein said aqueous acidic solution comprises a member of the group consisting of hydrochloric acid, acetic acid and lactic acid.

36. (Original) A method according to claim 33, wherein said concentration of chitosan is between 1 wt % and 3 wt %.

37. (Original) A method according to claim 33, wherein the concentration of said oxidizing agent is  $\geq 0.001$  wt %.

38. (Original) A method according to claim 37, wherein the concentration of said oxidizing agent is between 0.01 and 0.5 wt %.

39. (Original) A method according to claim 33, wherein said aqueous basic solution comprises a member selected from the group consisting of sodium hydroxide, potassium hydroxide, sodium carbonate and potassium carbonate.

40. (Original) A method according to claim 39, wherein said aqueous basic solution has a concentration of between 5 wt % and 10 wt %.

41. (Original) A method according to claim 33, wherein said gel forms at  $6.3 \leq \text{pH} \leq 6.9$ .

42. (Original) A method according to claim 33, wherein said method is a batch process.